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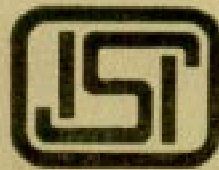
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Indian Standard
SPECIFICATION FOR
HOSIERY YARN, WORSTED

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SPECIFICATION FOR HOSIERY YARN, WORSTED

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LUDHIANA

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SHRI P. K. MITRA (*Alternate*)
SHRI R. RAJPAL

Yogendra Knitting Mills, New Delhi

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Indian Standard

SPECIFICATION FOR HOSIERY YARN, WORSTED

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 28 August 1973, after the draft finalized by the Hosiery Sectional Committee had been approved by the Textile Division Council.

0.2 This standard deals with wool hosiery yarn spun on worsted system. Nowadays hosiery yarn spun from the blends of wool with man-made fibres are also becoming popular.

0.3 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value shall be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the requirements of wool hosiery yarn spun on worsted system.

2. TERMINOLOGY

2.1 For the purpose of this standard, the definitions given in IS : 3596-1967† shall apply.

3. MANUFACTURE

3.1 Yarn — The hosiery yarn shall be spun on worsted system from wool fibres only or blends of wool with man-made fibres like viscose rayon, acrylic, polyamide or polyester. The yarn shall be evenly spun and plied yarn shall be uniformly twisted.

*Rules for rounding off numerical values (*revised*).

†Glossary of terms relating to hosiery.

3.1.1 A reference shall be made to IS : 1793-1973* for permissible limit of non-wool fibre content and the method of test for determining the composition of hosiery yarn.

3.2 Wool Tops — The wool tops used for spinning yarn shall be of at least 48^s grade depending upon the end use. The specification of wool tops processed out of imported wool shall be as given in IS : 5911-1971† and those for 48^s wool tops processed out of indigenous wool shall be as follows:

a) Range of average fibre diameter	32·01 to 36·00 microns
b) Fibre diameter distribution, percent:	
40·0 μm and under	70, <i>Min</i>
40·1 μm and over	30, <i>Max</i>
60·1 μm and over	3, <i>Max</i>

3.3 Freedom from Defects — The yarn shall be reasonably clean and free from vegetable matter, snarls, slubs, loose ends, odd knots, knots with long tails, stains, etc.

4. REQUIREMENTS

4.1 Count and Breaking Load — The count of yarn shall be as agreed to between the buyer and the seller, however, a tolerance of ± 5 per cent is permitted on agreed values. The minimum single strand breaking load of yarn shall be as given below:

<i>Count of Yarn</i>	<i>Single Strand Breaking Load, g, Min</i>
80 tex (11 ^s)	280
40 tex (22 ^s)	125
88 tex $\times 2$ (10 ^s /2)	850
80 tex $\times 2$ (11 ^s /2)	800
74 tex $\times 2$ (12 ^s /2)	800
55 tex $\times 2$ (16 ^s /2)	450
40 tex $\times 2$ (22 ^s /2)	340
30 tex $\times 2$ (30 ^s /2)	225
80 tex $\times 3$ (11 ^s /3)	1 250
55 tex $\times 3$ (16 ^s /3)	900

NOTE 1 — The hosiery yarn of counts listed above are commonly used in hosiery garments required by defence and other government departments.

*Guide for marking textile materials made of wool (*first revision*).

†Fineness grades of wool tops.

NOTE 2 — Hosiery yarn of the following counts are also in use for trade varieties of hosiery garments. The single strand breaking load of these counts of yarn shall be as agreed to between the buyer and the seller:

37 tex	(24 ^S)
37 tex × 2	(24 ^S /2)
32 tex × 2	(28 ^S /2)
28 tex × 2	(32 ^S /2)
22 tex × 2	(40 ^S /2)
18 tex × 2	(48 ^S /2)
16 tex × 2	(56 ^S /2)

4.1.1 The count of yarn shall be tested by the method given in IS : 681-1964*. Single strand breaking load shall be determined by the method given in IS : 1670-1970†.

4.2 Twist Factor — The twist factor of single yarn shall be 18 to 30 and of double yarn from 18 to 22 as agreed to between the buyer and the seller.

4.2.1 The twist factor shall be calculated by using the following relationship:

$$\text{Twist factor} = \text{tpm}/100 \times \sqrt{\text{Universal count in tex}}$$

4.2.2 The twists per metre (tpm) shall be determined by the method given in IS : 832-1964‡.

NOTE — Twist multiplier is corresponding to the twist factor in indirect system of yarn numbering. The twist multiplier when multiplied by the squareroot of the count in indirect system gives the number of turns per inch. For yarns spun on worsted systems the relationship between twist factor and twist multiplier is as under:

$$\text{Twist factor} = 12 \times \text{Twist multiplier.}$$

4.3 Balance of Twist — The yarn shall not have undue tendency to retwist. However a maximum of 8 turns as retwist or double on account of a kink shall be permitted when approximately 1.5 metre length of yarn is taken out from the conditioned package and is held horizontally in the two hands and the two ends of yarn are slowly brought together.

4.4 Moisture Regain — The moisture regain of hosiery yarn shall not exceed 18.25 percent when determined by the method specified in IS : 4902-1968§.

4.5 Scouring Loss — The scouring loss of hosiery yarn shall not exceed 5.0 percent when determined by the method given in Appendix A.

*Universal count of woollen and worsted yarn.

†Breaking load, elongation at break and tenacity of yarns (first revision).

‡Method for determination of twist in yarn.

§Method for determination of correct invoice weight and moisture content of woollen and worsted yarns.

4.6 pH Value — The pH value of aqueous extract of hosiery yarn shall be 5.0 to 7.5 when determined by the cold method specified in IS : 1390-1961*.

4.7 Alkali Solubility — The alkali solubility for hosiery yarn shall not exceed 25 percent in case of bleached yarn and 20 percent in case of dyed yarn when tested by the method specified in IS : 3429-1966†.

4.8 Preservation — The yarn shall be rendered moth-proof if required by the buyer, otherwise the yarn shall be preserved with naphthalene. The moth-proofing agent employed for the purpose may be dieldrin or DDT as agreed to between the buyer and the seller.

NOTE — Proofing agents other than those prescribed above may be used subject to agreement between the buyer and the seller. Proofing agents shall however, be of such a nature and composition that its required amount can be estimated by a chemical test.

4.8.1 The proofing agent shall not be less than as indicated below when tested by the method given in IS : 3522 (Part II)-1970‡:

Dieldrin	0.03 percent
DDT	0.3 percent

4.9 Colour Fastness — The hosiery yarn shall be fast to light and washing. If specifically prescribed by the buyer, the yarn shall be fast to rubbing, perspiration, dry-cleaning and hot-pressing.

4.9.1 The minimum colour fastness ratings of various agencies shall be as given below when tested by the corresponding method of test:

Agency	Rating	Method of Test, Reference to
Light	4	IS : 2454-1967§ or IS : 686-1957
Washing	3	IS : 687-1956¶
Rubbing	3	IS : 766-1956**
Perspiration	3	IS : 971-1956††
Dry-cleaning	4	IS : 4802-1968‡‡
Hot pressing	4	IS : 689-1956§§

*Methods for determination of pH value of aqueous extracts of textile materials.

†Method for determination of solubility of wool in alkali.

‡Methods for estimation of common preservatives used in the textile industry, Part II.

§Method for determination of colour fastness of textile materials to artificial light (xenon lamp).

||Method for determination of colour fastness of textile materials to daylight.

¶Method for determination of colour fastness of textile materials to washing: Test 1 (first revision).

**Method for determination of colour fastness of textile materials to rubbing.

††Method for determination of colour fastness of textile materials to perspiration.

‡‡Method for determination of colour fastness of textile materials to dry-cleaning.

§§Method for determination of colour fastness of textile materials to hot pressing.

5. PACKAGING

5.1 The yarn shall be made into hanks, cones or cheeses as agreed to between the buyer and the seller.

6. MARKING

6.1 Each package shall be marked with the following:

- a) Grade of wool tops;
- b) Count of yarn;
- c) Composition of yarn;
- d) Weight;
- e) Dye lot number and manufacturer's shade number; and
- f) Manufacturer's name, initials or trade-mark.

6.1.1 The packages may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

7. PACKING

7.1 The yarn shall be packed in accordance with the procedure laid down in IS : 2518-1964* or IS : 3353-1966†.

8. SAMPLING

8.1 Lot — In any consignment all the hosiery yarn manufactured from the same grade of wool tops and of the same count delivered to one buyer against a despatch note shall be grouped together to constitute a lot.

8.2 The conformity of the lot to the requirements of this specification shall be determined on the basis of the tests carried out on the samples selected from it.

*Code for seaworthy packaging of wool hosiery yarn and goods.

†Code for inland packing of wool hosiery yarn and goods.

8.3 Unless otherwise agreed to between a buyer and a seller, the number of packages of yarn to be selected at random from a lot shall be as follows:

<i>No. of Packages in the Lot</i>	<i>No. of Packages to be Selected</i>
Up to 300	5
301 to 500	8
501 to 1 000	13
1 001 and above	20

8.4 The number of tests and criteria for conformity for each characteristic shall be as follows:

<i>Characteristics</i>	<i>Number of Tests</i>	<i>Criteria for Conformity</i>
Count of yarn, breaking load, twist factor and balance of twist	One from each package selected according to 8.3	Each observed value satisfy the relevant requirement
Moisture regain, scouring loss, pH value, alkali solubility, moth-proofing and colour fastness	3 test specimens up to lot size of 1 000 packages or otherwise 5	do

APPENDIX A

(Clause 4.5)

METHOD FOR DETERMINING SCOURING LOSS

A-1. TEST SPECIMEN

A-1.1 Take about 10 g of yarn from each sample. This shall constitute a test specimen.

A-2. PROCEDURE

A-2.1 Dry the test specimen to constant mass in the drying oven at $105 \pm 3^{\circ}\text{C}$ temperature and determine its mass accurately.

NOTE — Constant mass shall be deemed to have been reached if the difference between the two successive weighings at an interval of 20 minutes is less than 0.05 percent.

INDIAN STANDARDS

ON

HOSIERY

IS:

- 833-1967 Rib-knitted gents' nylon stockings
- 834-1970 Cotton yarn, grey, for hosiery (*first revision*)
- 2187-1973 Socks, wool (worsted) (*first revision*)
- 2360-1970 Y-neck jerseys, plain-knitted (*first revision*)
- 2518-1964 Code for seaworthy packaging of wool hosiery yarn and goods
- 2522-1963 Knitted worsted mufflers
- 2523-1963 Worsted hose tops
- 2783-1969 Balaclava caps, plain-knitted (*first revision*)
- 3086-1965 Code for seaworthy packaging of cotton hosiery yarn and goods
- 3100-1965 Men's wool-cotton short drawers
- 3325-1965 Code for inland packaging of cotton hosiery yarn and goods
- 3326-1965 Cotton stockinette
- 3329-1973 Socks, cotton (*first revision*)
- 3330-1965 Wool-cotton vests
- 3353-1966 Code for inland packing of wool hosiery yarn and goods
- 3530-1966 Rib-knitted cotton stockings
- 3555-1966 Cotton singlets, white with blue welting
- 3596-1967 Glossary of terms relating to hosiery
- 3604-1966 Round neck jerseys
- 3617-1966 Gents' worsted pullovers, one-piece (interlock-knitted)
- 4044-1967 Gents' slipovers
- 4046-1967 Gents' cotton knitted briefs
- 4053-1967 Knitted puttees, dyed
- 4375-1967 Cotton knitted sports shirts
- 4376-1967 Plain-knitted gents' cotton short drawers
- 4582-1968 Ladies' cardigans
- 4809-1968 Cotton-knitted string vests
- 4964-1968 Plain-knitted cotton vests
- 4965-1968 Interlock-knitted cotton vests
- 5084-1969 Nylon socks
- 5085-1969 Berets, knitted, one-piece
- 5450-1969 Gloves, knitted
- 5524-1969 Wool-cotton underpants

TO

IS:7026-1973 SPECIFICATION FOR HOSIERY YARN, WORSTED

Alterations

(Page 4, clause 3.2) - Substitute the following for the existing clause:

'3.2 The wool tops used for spinning yarn shall be of at least 48s grade depending upon the end-use of hand-knitting wool yarn. The specifications of wool tops processed out of imported wool as well as indigenous wool shall conform to those given in IS:5911-1977[†].'

(Page 4, foot-note with '+' mark) - Substitute the following for the existing foot-note:

'[†]Fineness grades of wool tops (first revision).'

(TDC 15)